Executive summary

The GIWA region 17 Baltic Sea is located in northeast Europe, comprising a catchment area of 1 720 270 km^2, of which nearly 93% belongs to the nine riparian countries; Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland, Russia and Sweden. Five upstream states, Belarus, Ukraine, Czech Republic, Slovakia and Norway, account for the remaining 7% of the catchment area. The Baltic Sea is one of the largest brackish water areas in the world, is an almost enclosed sea, connected to the North Sea by the narrow and shallow waters of the Belt Sea and the Sound only. This is a sea comprising of a complex system of water basins, which can be further divided into several gulfs and bays. The physical characteristics of the Baltic Sea including its hydrographic, hydrochemical and biological properties as well as socio-economic characteristics, makes it very sensitive to anthropogenic pressures.

The GIWA assessment evaluated the relative importance of different concerns in the Baltic Sea region. Environmental and socio-economic impacts were assessed under present and future conditions, and overall impacts and priorities were identified. The GIWA assessment ranked Pollution as having severe impact in the region, whereas all of the other concerns except for Global change had a moderate impact. Global change was not considered to have significant impacts in the Baltic Sea region at present. The concerns for the Baltic Sea region were ranked in descending order:

1. Pollution
2. Unsustainable exploitation of fish and other living resources
3. Habitat and community modification
4. Freshwater shortage
5. Global change

There is expected to be no major changes in the future regarding the concerns of Freshwater shortage, Habitat and community modification or Unsustainable exploitation of fish and other living resources. The impact of Global change is however predicted to increase. Environmental protection measures; such as biological wastewater treatment, nitrogen and phosphorus removal, use of best available technology (BAT) and best environmental practice (BEP), are expected to bring about a reduction in the nutrient load in the region, thus decreasing the impact of pollution. Generally no significant change of the region's population size is expected, although in some coastal areas the population may increase due to further migration and urbanisation. Consequently, pressure on the coastal areas will increase.

The issues of eutrophication and overexploitation were assessed causing severe impacts in the region and were also considered as having the most transboundary impacts; the Causal chain analysis was therefore conducted on these two issues. The input of nitrogen has decreased considerably in the Baltic Sea following the implementation of measures by the riparian countries, however eutrophication still remains an urgent problem in most coastal areas. Fishing activities are effecting the species composition and size distribution of the main target species as well as non-commercial fish stocks. Despite regulations, fishing fleets continue to overexploit the fish stocks in the Baltic Sea.

The immediate causes of eutrophication identified in the Causal chain analysis were the aquatic load of nutrients from urban areas and agriculture, and the atmosphere deposition of nitrogen into the Baltic Sea, mainly from the energy and transport sector. The root causes connected to the issue involved difficulties in integrating agriculture, energy and transport policies into a broader environmental context, for example inadequate adoption of modern agricultural technology, lack of investment in wastewater facilities, as well as population growth and increased road and sea traffic.

The causal chain analysis identified the immediate causes for overexploitation to be a combination of high exploitation rates and overutilisation of fishing quotas on the one hand and an oversized fleet

capacity on the other. Economic factors such as fishing subsidies, market failure and reform failures, are driving these immediate causes but inappropriate assessment methods and other governance weaknesses are also inhibiting the successful management of the fisheries.

The Policy option analysis aimed to address the root causes identified in the Causal chain analysis. Identified policy options and the mechanisms necessary to solve the problems were identified for the Baltic Sea region, taking into account the international obligations and agreements adopted by the Baltic Sea states during the last two decades. There have been a number of international agreements that have established a framework for reducing the nutrient enrichment of the Baltic Sea and for managing the fisheries resource. The most important of these are the Convention on the protection of the marine environment of the Baltic Sea (Helsinki Convention); the Convention on Fishing and Conservation of the Living Resources in the Baltic Sea and the Belts (Gdansk Convention), and for the EU member states, the Water Framework Directive (WFD).

For aspects concerning eutrophication the following courses of action were identified:

- Integrate agricultural, energy and transport policy with the environmental policy proposed by the European Commission, the Helsinki Commission, the International Baltic Sea Fishery Commission and other international conventions in order to reduce the discharge of nutrients to the Baltic Sea.
- Cooperate with countries outside the EU, such as Russia, Belarus and Ukraine, with the aim to harmonise their environmental legislation with the EU countries, such as adopting the EU Water Framework Directive.
- Support and develop existing agricultural cooperation projects and networks.
- The European Commission is invited further to support the implementation of transboundary environmental projects.
- Governments are invited to support economically the implementation of new environmentally friendly technologies in agriculture, transport and energy production.
- Governments, especially in the new EU countries and Russia, are invited to support investments in wastewater treatment facilities to reduce emissions from heat and electricity production units as well as from road and sea traffic.

Concerning aspects related to overexploitation of living resources the following course of action were identified:

- An integration of fishery policies with economic and environmental strategies in order to strengthen sustainable fisheries.
- Development of comprehensive approaches combining decommissioning schemes and regulatory measures, and the construction of a stabile system of taxation, prices of fuel and materials.
- Establish more stringent control over vessel documentation and fishing statistics.
- Ensure obligatory registration of all catches and all export transactions on land.
- Improve and unify a system of fish auctions for all Baltic countries.
- A creation of appropriate assessment methods leading to the establishment of reliable total allowable catches (TACs).
- Improve the reporting of landings by introducing an electronic network and exchange of this information between Baltic countries.
- Support for the construction of appropriate fishery laws that can efficiently manage the new market conditions is emphasised.